buildings

MDPI

Review

Gig Regulation: A Future Guide for the Construction Industry

Fortune Aigbe [1,2,*], Clinton Aigbavboa [1,2], John Aliu [3] and Lekan Amusan [1,2]

[1] Department of Construction Management and Quantity Surveying, University of Johannesburg, Johannesburg 2006, South Africa
[2] CIDB Centre of Excellence & Sustainable Human Settlement and Construction Research Centre, Johannesburg 2006, South Africa
[3] Engineering Education Transformations Institute, College of Engineering, University of Georgia, Athens, GA 30602, USA
* Correspondence: fortune.aigbe@yahoo.co.uk

Abstract: Technology has led to the advent of digitally enabled workforces like the gig workforce, but a number of issues confront this workforce. This study aims to identify the various issues facing the gig workforce as well as the regulatory measures and regulatory interactions proposed to guide stakeholders in addressing these challenges. This study is a review, with the methodology primarily based on secondary sources of data collection like journals and articles. This study reveals that the construction industry is not immune to the use of the gig workforce, as it often performs project-based construction work, jobs requiring highly specialized skills and commodity service jobs. This study also reveals that the gig workforce is confronted with primarily gig economy-induced platform-based challenges, such as the new nature of work, i.e., exploitative, precarious, and dangerous labour. Furthermore, this study also reveals that these issues can be addressed primarily through regulatory means and regulatory interactions between proposed regulatory measures and existing labour laws, which could be by Coordination, Competition, etc. This aligns with SDG 8, i.e., Decent Work and Economic Growth, as concerns issues related to their benefits, and SDG 10, i.e., Reduced Inequalities, as concerns issues related to their employment relations. The implication of this study for construction stakeholders relates to the development of new regulations and providing a valuable tool for analysing regulatory landscapes and understanding the dynamics of regulatory change, which contributes to scholarly discussions on fair labour practices and the protection of gig workers and helps inform policymaking that will help attract, motivate, retain, and engage more gig workers in the construction industry, which will foster proper workforce management.

Keywords: technology; gig workforce; regulation; policy; legal framework; labour act

check for updates

Academic Editors: David Arditi and Pramen P. Shrestha

Received: 3 December 2024
Revised: 9 January 2025
Accepted: 2 February 2025
Published: 5 February 2025

Citation: Aigbe, F.; Aigbavboa, C.; Aliu, J.; Amusan, L. Gig Regulation: A Future Guide for the Construction Industry. *Buildings* **2025**, *15*, 490. https://doi.org/10.3390/buildings15030490

Copyright: © 2025 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Construction is a collaborative effort involving many people with different interests and backgrounds, who will undergo complex project lifecycle processes which include planning, designing construction, market study, and procurement, with humans at the centre of these activities [1,2]. Hence, the success of construction project largely depends on the management of human resources.

Various factors will cause disruption in the future workforce, among which are globalization, technological shifts [3], etc. Globalization is a wide-ranging system of economic, cultural, social, and political interconnections and processes which traverse domestic borders and are critical factors in the penetration and diffusion of digital technologies; it is a tool for lowering technology transfer barriers [4,5]. Technological

changes have impacted on employment relations and altered the traditional full-time workforce model to include the gig workforce model [6]. The construction industry is not new to the term "gig", as work in the industry is predominantly project-based, and many workers do not have one employer and a steady location of work [7], but technology has birthed short-term and contract-based work enabled by digital platforms and has provided a marketplace to facilitate a match between clients and workers [8].

The future workforce will be a diverse population of workers in terms of their skills composition, who they are, their location and the time they work, and the type of employment relations they have, as their expectations of employment will be different to previous generations [9,10]. Those who work full-time jobs today will be in the minority, as standard work will exist alongside non-standard work, such as gig work, which does not have the legal protection and social benefits enjoyed by standard-arrangement workers [11,12]. The gig workforce can be described as part-time, temporary, and flexible workers who work via digital platforms, increasing an organization's scalability. Furthermore, the gig phenomenon is characterized by voluntary choice, platform intermediation, and temporary work under continuously renewed fixed contract terms, which consist of high expertise and commodity services [6,13]. There have been various studies on the gig workforce, such as [14,15], but there are few or no studies that have addressed regulating gig work in the construction industry. This study aims to provide a guide for regulating gig work in the construction industry based on the following objectives: (a) identifying gig issues, (b) identifying various regulatory measures, and (c) proposing regulatory interactions to determine the future regulation of the construction industry. This study contributes to scholarly discussions on fair labour practices and the protection of gig workers and helps inform policymaking that will help attract, motivate, retain, and engage more gig workers in the construction industry, which will foster proper workforce management.

2. Literature Review

2.1. Overview of Various Megatrends That Cause Future Workforce Disruption

Ref. [3] stated that the drivers of future work and workforce disruptions are technology, globalization, demographic upheaval, and the rise of a new social contract, etc. Furthermore, ref. [10] stated that the future of work and the workforce of the future will be impacted by global megatrends such as technological shifts, demographic shifts, and rapid urbanization, etc. These forces will determine who, where, when, and how work is performed [3].

2.1.1. Globalization

Globalization is a wide-ranging system of economic, cultural, social, and political interconnections and processes that traverse domestic borders and are a fact to which policymakers must adapt [4]. Ref. [16] described the dimensions of globalization as social, economic, and political. Ref. [5] asserted that globalization is a critical factor in the penetration and diffusion of digital technologies; it is a tool for lowering technology transfer barriers and for helping boost innovation and productivity. Globalization is a necessary precondition for digital technology adoption.

2.1.2. Technological Shift

Technology is transforming the workplace, as there is a constant evolution of new technologies. The 1700s birthed the Industrial Revolution, which introduced mechanical looms (water and steam-based) and brought about increased urbanization, new machines and technologies, and the Second Industrial Revolution, which occurred in the 1870s, introduced electrical energy powering mass production [17]. The Third Industrial Revolution was based on electronics and the Digital Revolution (IT) with its associated technologies such

as computers, the internet, and biotechnology [18], while the Fourth Industrial Revolution (IR 4.0), which is built on a Cyber-Physical System, (i.e., a Digital Revolution), helps blur the lines between the physical/digital and biological entities [19]. Ref. [20] stated that the Fourth Industrial Revolution raised a number of managerial challenges such as planning, strategy, leadership, and human resources issues. Furthermore, ref. [21] opined that these technologies present benefits like motivational and productivity gains even among the aged workforce, as well as threats such as stress and issues of well-being to the workforce. Ref. [22] described the employee issues raised by technological factors such as digital technologies as privacy invasion, unemployment, the need for a qualified workforce, an increase in psychological risks, and reduced inter-human contact. Ref. [23] attributed employee issues to technological factors, i.e., digital technology and robotics, and further enumerated the issues as issues of skills, fatigue, physical and mental workload, autonomy/control, job security, stress or anxiety, job fulfilment, monotony of the job, safety concerns, occupational disease, and issues of interaction with colleagues. Ref. [24] stated that technology causes social threats, and these threats include job losses, the inability of displaced workers, and irreplaceable jobs. Ref. [25] affirmed that technology causes human risks, which include work overload, personal injury, human error, and loss of income. Furthermore, ref. [26] emphasized that technological advancements have made companies begin to balance their workforce model between the archaic full-time workforce model and the gig workforce model.

2.1.3. Rise of a New Social Contract

There will be a new social contract between employers and employees, which will lead to new forms of employment relations, i.e., standard employment relations such as full-time employment and non-standard employment relations (like gig work). The full-time workforce model encompasses a "standard employment relationship" (which is the legal regulation or contractualization of the employment relationship), while the gig workforce model encompasses a non-standard employment relationship which deviates from the standard employment relationship [27]. A number of labour relation issues could emanate from the rise of this social contract; Ref. [14] stated that gig workers operate within a gig economy/an on-demand economy which is besieged by labour issues such as non-standard employment and employee misclassification, a lack of the social safety net that standard employment provides, etc.

2.1.4. Urbanization

Urbanization, or the shift of population from rural to urban environments, is typically a transitory process which moves populations from traditional rural environments with informal political and economic institutions to the relative anonymity and more formal institutions of urban settings due to changes in national economic sector composition and in technology [28]. Ref. [29] identified the various dimensions of urbanization as urban places and urban hierarchy, urban primacy, over-urbanization, and urban sprawl, while the various factors of urbanization include agriculture, commercial revolution, and technology, etc.

Hence, from the above, it is observed that globalization acts as a catalyst for technology adoption, while technology fuels urbanization, strengthens the social contract (particularly in terms of employment relations), and fosters demographic shifts in societal composition (including changes in age demographics, racial and ethnic diversity, gender roles, and cultural landscapes). Also, technological shift, compared to other megatrends, provides a new digital platform and technologies which make the future workforce even more diverse in terms of skill composition, demographics, location and time of work, and employment relations [9], while also introducing new workforce issues [20] and a new workforce model. Table 1 below shows the drivers of future work and workforce disruption.

Table 1. The drivers of future work and workforce disruption.

Author(s)	Megatrends
[3]	Technology, globalization, demographic upheaval, and the rise of a new social contract
[10]	Technological shift, demographic shift, and rapid urbanization, etc.

2.2. The New Workforce Model

(a) Full-Time Workforce Model

Full employment is defined as permanent employment with a stable salary and job security [30]. Ref. [31] further defined full-time employment as a standard, stable, open-ended employment model with a full range of labour and social security protection and a direct arrangement between employees and their unitary employers. Furthermore, the study identified the features of this kind of employment as personal subordination, a bilateral character, a mutuality of obligations, a salary, economic dependency, and the performance of work on the employers' premises. Ref. [12] stated that full-time standard employment typified an industrial model standard work arrangement which is made up of important labour protections and benefits such as old age assistance and benefits, collective bargaining rights, minimum wage and overtime, employment discrimination protection, safety and health protections, pension, health, and other employee benefits.

(b) Gig Workforce Model

Nowadays, standard work exists alongside non-standard work, such as gig work, which has no legal protection and social benefits enjoyed by standard-arrangement workers [12]. Ref. [8] stated that technological advancement has given rise to short-term and contract-based work enabled by digital platforms, which have provided a marketplace to facilitate a match between clients and workers. Furthermore, ref. [32] highlighted the benefits gig workers enjoy as a result of their employment relation, such as flexibility, access to global job postings, and working in an area of interest. Ref. [14] described gig workers as part-time, temporary, flexible, and platform workers, increasing an organisation's scalability. Furthermore, ref. [6] also described the gig phenomenon as being characterized by voluntary choice, platform intermediation, and temporary work under continuously renewed fixed contract terms, which consists of high expertise and commodity services.

As organizations adapt their processes to integrate gig work, a blended workforce is created where standard and non-standard workers work together on the same project or do the same type of work [6,12]. Furthermore, ref. [33] defined a blended workforce as a workforce that is a combination of permanent full-time, part-time employees, etc.

2.3. Kinds of Work Performed by Gig Workers in the Construction Industry

The construction industry is not new to the term "gig", as work in the industry was predominantly project-based, and many workers did not have one employer and a steady location of work [7]. Therefore, as organizations adapt their processes to integrate gig work due to technological changes, a blended workforce is created where full-time and gig workers work together on the same project or do the same type of work [6,12], which helps complement each other, thereby reducing the traditional full-time worker job demands. Therefore, full-time employed professionals will work with gig professionals as they perform both specialized and non-specialized jobs.

2.3.1. Specialized Jobs

These jobs require high expertise in terms of knowledge, skill, and abilities, such as the preparation of plans, specifications, and reports and overseeing the technical aspects of a construction project, including the design criteria, analysis methods, and selection of

materials [34]. Also, in the construction industry, jobs that require high expertise are carried out at different phases of construction, that is, the design phase, the construction phase, and the operation and maintenance phase.

(i) Design Phase

Professionals in the design phase: architects, structural engineers, quantity surveyors, land surveyors, etc.

The duties of the design professionals can be performed by gig workers.

Ref. [35] identified the duties of an architect as advising clients on land use limitations, preparing sketch plans and specifications, elaborating, modifying, and amending sketch plans, and preparing working drawings and specifications. As the traditional workforce model evolves to include the gig workforce, these specialized duties originally performed by full-time architects can also be performed by an online gig architect relying on digital platforms and remote collaborations.

Ref. [35] identified the duties of a quantity surveyor as preliminary cost advising, cost planning, procurement and tendering, risk analysis, cash flow forecasting, and financial reporting. These specialized duties, originally performed by a full-time quantity surveyor, can also be performed by a gig quantity surveyor.

(ii) Construction Phase

Ref. [36] identified the duties of a builder as including engaging in buildability and maintainability analysis, preparing production management documents, and building production management. Some aspects of the above specialized duties of a builder can also be performed by online gig builders.

(iii) Operations and Facility Management Phase

Ref. [37] described some of the duties of a facility manager as calculating and comparing costs for required goods and services to achieve maximum value for money, liaising with tenants of commercial properties, responding appropriately to emergencies or urgent issues as they arise, and planning for future development in line with strategic business objectives. These specialized duties, originally performed by full-time facility managers, can also be performed by gig facility managers

2.3.2. Commodity Service Jobs

Resource suppliers ensure the purchase, delivery, handling, waste minimization, quality assurance, quantity management, and timely procurement of materials [38]. With the alteration in the workforce model, the above-mentioned aspects of resource-supplying jobs can be performed by full-time and gig resource suppliers. Furthermore, commodity services include services that do not require highly specialized skills, such as online rentals of physical assets [11].

2.3.3. Project-Based Jobs

These are jobs with defined starts and end dates, with clear goals, milestones, and deliverables, which allows for the quick pull-in of skills internally and externally as needed from the workforce ecosystem [39]. Jobs that fall under this category are building construction and urban planning jobs [40]. Hence, both full-time and gig workers can perform project-based jobs in the construction industry.

Previous studies such as refs. [12,31] have highlighted the benefits accrued to full-time employment, which are protected by existing labour laws but are inadequate to protect gig workers, leading to gig workforce issues. Hence, this study reviews various gig workforce issues, proposed gig work regulatory measures, and how using regulatory interactions will help to determine the kind of regulatory measures to be developed, as well as interact with existing laws.

3. Method

This study is based on a systematic literature review of secondary data sources such as articles and journals. These articles and journals were sourced from databases like Scopus. The literature search criteria included collective keywords, using Boolean logic to refine the searches [41]. The search on Scopus was within Article Title, Abstract, and Keywords. The Keywords used were Gig AND Work or Economy AND Regulation, i.e., ((gig) AND (work OR economy) AND regulation). This search strategy, when applied, resulted in a total of 204 articles. No date range was applied, but the document type was limited to only articles because they are usually peer-reviewed, and the language was limited to English. This resulted in a total number of 139 articles after the application of these limitation strategies. The abstracts of these articles were reviewed, and articles not addressing gig work regulation or gig economy regulations were excluded from this study, resulting in a total of 48 articles. Furthermore, the full text of these articles was read through, and those articles not completely in line with the subject were excluded. This brought the number of articles to 34, which were classified according to gig workforce issues and proposed regulatory measures for addressing gig issues. A thematic analysis was adopted [42], which involved reading text, coding, theme development, and data interpretation. Figure 1 below shows the diagrammatic representation of the methodological approach.

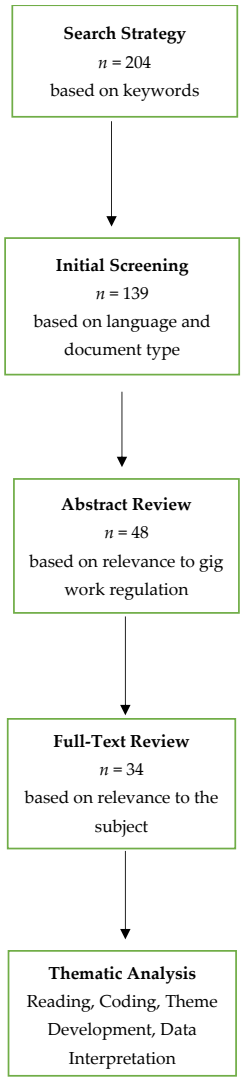


Figure 1. A diagrammatic representation of the methodological approach. Source: authors' own processing, 2024.

4. Result

4.1. Overview of Article Publication Year

Most of the articles included in this study were published between 2017 to 2024. This shows that the issues related to the gig economy are becoming a more topical issue compared to previous years.

4.2. Gig Workers Issues

According to the various authors from this study, sundry issues affect gig workers. Table 2 below highlights the various gig workers issues.

Table 2. Gig Workers Issues.

Author(s)	Issue(s)
[43]	Lack of worker protections
[7,44–46]	Misclassification
[47]	Social protection
[48–50]	Precarious nature of job
[51]	Labour rights
[52]	Lack of integrative social and work model
[53]	Health and regulation
[54]	Low rates of unionisation
[55]	Lack of protective labour laws
[56]	Weak regulation and protection
[57]	Industrial relations and labour rights
[58–60]	Labour and social protection
[61]	New organization of work
[62]	Transnational business model
[63,64]	Labour rights and regulatory issues

Source: Researcher's own processing, 2024.

4.3. Regulatory Measures

Various authors have proposed different regulatory measures to address these gig workforce issues, among which are the following:

(a) Tailor-made regulation (in the areas of instruction, freedom of schedules and working hours, freedom to work on more than one platform, employees' liability for damages, minimum wage, reimbursement of expenses, and subsidiary labour law) for the gig economy because the individuals that work on an online platform are subject to risks that are specific [65].

(b) Ref. [66] proposed the protection of workers by creating new categories of worker benefits and protection, new policies' development, and the advocacy and engagement of workers.

(c) Ref. [67] proposed that a functional concept of the entrepreneur be adopted as a regulatory solution to external work, with platforms.

(d) Ref. [68] proposed some regulatory measures for addressing gig workers issues, including the following: allowing gig workers to access the Fair Work Commission to resolve disputes; establishing a specific tribunal to handle disputes involving gig workers; mandating that platforms provide worker compensation coverage; requiring platforms to provide adequate training to workers; requiring platforms to disclose

average earnings data to relevant government agencies; ensuring that gig workers are paid at least the minimum wage; conducting in-depth studies to understand the long-term impacts of gig work on labour markets and worker well-being; and comparing the experiences of gig workers across different countries to identify best practices and potential policy solutions.

(e) Ref. [69] highlighted the regulatory focus to include neutralizing unemployment benefits for all employment forms and ensuring that labour standards on a par with collective agreements are adhered to.

(f) Ref. [70] stated that, in 2020, the State of California enacted a law (Assembly Bill 5) that, for purposes of the State's labour code, deems people providing labour or services for remuneration, such as self-directed gig workers, to be employees rather than independent contractors (the law does not apply if the hiring gig entity can demonstrate that the person performing the work is free from the entity's control and direction in the performance of the work). Also, the regulations direct the State's unemployment agency to help gig workers file for unemployment benefits on the same footing as would traditional employees.

(g) Ref. [71] highlighted the need for new regulations which should contain features such as the recognition of platform workers as collective bargaining actors explicitly, a presumption of employment relationships' reinforcement, agreements on fundamental relationship governing principles, and the freedom to set up working hours and schedules.

(h) Ref. [72] stated that the first European law on platform work (Riders' Law 12 of 2021) was developed in Spain. The law included a reform in the presumption of employment for platform workers and the right of workers' representatives to be consulted and report on algorithm use in the workplace.

(i) Ref. [73] highlighted the regulatory measures taken by the Indian government as defining gig workers under the Code of Social Security, while also proposing non-regulatory measures like ensuring a mental health module during skilling courses provided by aggregators, access to mental health facilities, updating and localising the minimum wage, increasing outreach, and simplifying the process of availing of social benefits, etc.

(j) Ref. [74] identified the role of state and non-state actors in regulating the gig economy as pre-regulatory considerations (stage 1), enactment of standards (stage 2), and enforcement (stage 3). This describes how the state may open up employment regulatory spaces to other non-state private actors, which then have a 'ceding' effect that privileges employers rather than workers or unions. The exercise of power in negotiations, lobbying, and the discourse of persuasion constitute another lever by which non-state actors seek to seize regulatory spaces and, in so doing, privilege corporate accumulation over universal employment rights.

(k) Ref. [75] proposed the need for a transnational regulatory arrangement for platform governance.

4.4. Proposed "Regulatory Interactions" Based on Laudau's Labour Dispute Regulation Framework

Regulatory Interactions

The pathways and mechanisms of regulatory interactions may be intentional or unintentional [76]. Ref. [77] identified four forms of interaction between regulatory orders: Competition, Coordination, Co-optation, and Chaos. Furthermore, the study described Competition as regulatory legitimacy. Ref. [76] described Coordination as deliberate or when an informal order 'complements' a formal one, such as where it 'fills in gaps' by addressing contingencies not dealt with in the law or strengthen incentives to comply

with formal rules. Ref. [77] emphasized that Coordination could be coherence, i.e., formulating standards within existing frameworks, and carving out, i.e., shaping standards around others to fill a perceived gap. Coherence ensures that amended regulations are consistent with the broader policy objectives, while carving out allows for tailor-made interventions to address specific challenges. Ref. [76] opined that Co-optation is when one regulatory order co-opts another, such as through convergence on norms and activities, 'meta-regulation', dominance, or hegemony. Also, the study stated that regulatory orders may overlap, each claiming authority and intersecting with others on multiple issues, producing confusion but with no identifiable pattern of interaction, making such interaction Chaotic. Regulatory interactions can help in preserving interest, filling gaps, strengthening compliance, identifying and resolving potential conflicts, adapting to changing dynamics, increasing overall regulatory capacity, providing common cognitive framing of goals and norms, and fostering local adaptability and flexibility [76,77].

4.5. Nature of Issues Addressed by the Proposed Regulatory Measures and Their Regulatory Interactions

The gig workforce's issues can be classified as gig economy-induced and occupation-related challenges [78]. The proposed regulatory measures and interactions for addressing workforce issues can be classified as follows (Table 3).

Table 3. Proposed Regulatory measures and Regulatory interactions.

Proposed Regulatory Measures	**Challenges**	**Regulatory Measures**	**Regulatory Interaction**
Regulatory Measures (Author)	**Gig Economy-Induced/ Occupational-Related**	**Regulatory Measures**	**Regulatory Interaction**
[65]	Gig economy-induced challenge	A tailor-made regulation (in the areas of instruction, freedom of schedules and working hours, freedom to work on more than one platform, employees' liability for damages, minimum wage, reimbursement of expenses, and subsidiary labour law) for the gig economy because the individuals that work on an online platform are subject to risks that are specific.	Competition, Coordination (coherence, carving out), Co-optation Chaos
[66]	Gig economy-induced challenge	Protection of workers by creating new categories of worker benefits and protection, new policies development and advocacy, engagement of workers.	Competition, Coordination (coherence, carving out), Co-optation Chaos.
[67]	Gig economy-induced challenge	A functional concept of the entrepreneur being adopted as a regulatory solution to external work with platforms.	Competition, Coordination (coherence, carving out), Co-optation Chaos

Source: Researcher's own processing, 2024.

From Table 3, it can be seen that most of the proposed regulatory measures are gig economy-induced, which addresses mainly platform-related challenges. This also shows that these proposed regulatory measures could be applied to any profession and

industry where the gig workforce is employed. These proposed regulatory measures could interact with existing labour laws by Competition, Co-optation, Chaos, and Coordination (carved out from or in coherence with existing labour laws) to either fill gaps, strengthen compliance or increase the overall regulatory capacity of existing regulations to address gig workforce issues.

5. Discussion

Different countries around the world have adopted various policies for addressing workforce issues; for example, in developing countries like South Africa, Ghana, and Namibia, different workforce policies and legal frameworks have been enacted, such as Ghana's Labour Act of 2003, Act 651, which was meant to address issues related to employment, wages and remuneration, conditions of work, social security, health, safety and welfare, and labour management relations [79]. The Namibian Labour Act, No. 7, 2007 was meant to address issues such as the basic conditions of employment, health, safety, and welfare of the employees, unfair labour practices, trade unions and employers' organizations, collective agreements, and dispute prevention and resolution [80]. And the South African Labour Relations Act No. 66 of 1995 was meant to address freedom of association, collective agreements, bargaining, and unfair labour practices such as unfair action relating to promotion, training, and other benefits afforded to an employee [81]. Also, all the BRICS countries ratified the International Economic, Social, and Cultural Rights on just and favourable conditions of work such as fair wages and equal remuneration, safe and healthy working conditions, prohibition of discrimination, freedom of association, and the right to strike [82]. These Acts, policies, and legal frameworks are mostly applicable to standard work arrangements, as opposed to non-standard work arrangements like those of the gig workers, which aligns with [83], which states that, in the Russian Federation, as in many other countries, freelance and platform work falls outside the scope of labour law. Hence the need for policy reforms as it relates to the development of skills, health and safety, and labour deployment and protection [84,85]. Also, the objectives of these Acts can be adopted to meet the needs of the gig workforce, while the actual elements of the Acts can be adapted to meet the prevailing conditions of the gig workforce.

In the construction industry, the gig workforce can perform various jobs, among which are specialized jobs, commodity service jobs, and project-based jobs. This agrees with [7], which states that gig workers work in the construction industry and can engage in building projects. This also agrees with [11,86], which states that gig workers can perform asset leasing and delivery services. The gig workers face various gig economy-induced issues, which include misclassification and lack of job security. This agrees with [7] and [87], which stated that misclassification is a major issue for gig workers in the construction industry, and they often do not receive protection. Various regulatory measures such as a tailor-made regulation [65] were proposed for managing the challenges of the gig workforce, and these measures interact with the existing measures which do not address the issues of the gig workforce. This agrees with [88], which states that a regulatory framework can be used to understand the combined effects of regulatory options, which could solve the problem associated with pay and classification issues. This also agrees with [65], which states these regulatory measures will help address specific risks.

Hence, previous studies such as refs. [65,79] have reviewed the existing labour laws and its inability to address gig workforce issues, thereby proposing regulatory measures to address these issues. Building on previous studies, this study examines how using regulatory interactions will help to determine the kind of regulatory measures to be developed, as well as interact with existing laws.

6. Conclusions

Technological advancement has introduced a new digital platform that has altered work arrangements, leading to non-standard work arrangements like gig work. Various issues confront these gig workers, which are generally gig economy-induced challenges based on the use of digital platforms. Various regulatory measures have been proposed to address these issues. Also, regulatory interactions will help to determine the kind of regulatory measures to be developed, as well as their interactions with existing labour laws. This aligns with SDG 8 (Decent Work and Economic Growth), as concerns issues related to their benefits, and SDG 10 (Reduced Inequalities), as concerns issues related to their employment relations. Hence, addressing these issues can help attract and retain a more diverse workforce in the construction industry. This is not to say regulatory measures will address all issues, but it will provide the necessary foundation upon which other measures can be built. Further studies could be carried out based on other measures apart from regulatory measures based on a country-specific approach using primary data sources. The role of stakeholders in promoting sustainable employment practices in the gig economy and the challenges and limitations of implementing regulatory measures could also be explored further.

Author Contributions: F.A. and C.A.: Conceptualization, Writing—original draft. F.A.: Methodology, F.A.: Writing—review and editing. F.A.: Visualization, Validation. C.A., J.A. and F.A.: Data curation and Resources. C.A., J.A. and L.A.: Supervision, funding acquisition, project administration. All authors have read and agreed to the published version of the manuscript.

Funding: There was no funding for this research, but the publication fee was paid by the University of Johannesburg through the Sustainable Human Settlement and Construction Research Centre.

Data Availability Statement: This study did not use primary data sources such as questionnaires.

Conflicts of Interest: The authors declare that there are no conflicts of interest.

References

1. Maskuriy, R.; Selamat, A.; Ali, K.N.; Maresova, P.; Krejcar, O. Industry 4.0 for the construction industry—How ready is the industry? *Appl. Sci.* **2019**, *9*, 2819. [CrossRef]
2. Ameh, O.J.; Daniel, E.I. Human resource management in the nigerian construction firms: Practices and challenges. *J. Constr. Bus. Manag.* **2017**, *1*, 47–54. [CrossRef]
3. Schwartz, J.; Bersin, J.; Bourke, J.; Danna, R.; Jarrett, M.; Knowles-Cutler, A.; Lewis, H.; Pelster, B. *The Future of the Workforce: Critical Drivers and Challenges*; Deloitte: Hong Kong, China, 2016.
4. Yalcin, B. What Is Globalisation. In *Comparative Social Policy Programme*; 2018, pp. 1–4. Available online: https://www.piie.com/microsites/globalization/what-is-globalization (accessed on 31 December 2023).
5. Skare, M.; Soriano, D.R. How globalization is changing digital technology adoption: An international perspective. *J. Innov. Knowl.* **2021**, *6*, 222–233. [CrossRef]
6. Banik, N.; Padalkar, M. The spread of gig economy: Trends and effects. *Foresight-Russia* **2021**, *15*, 19–29. [CrossRef]
7. Erlich, M. Misclassification in construction: The original gig economy. *ILR Rev.* **2021**, *74*, 1202–1230. [CrossRef]
8. Crayne, M.P.; Brawley Newlin, A.M. Driven to succeed, or to leave? the variable impact of self-leadership in rideshare gig work. *Int. J. Hum. Resour. Manag.* **2024**, *35*, 98–120. [CrossRef]
9. Ware, J.; Grantham, C. The future of work: Changing patterns of workforce management and their impact on the workplace. *J. Facil. Manag.* **2003**, *2*, 142–159. [CrossRef]
10. PwC. Workforce of the Future. 2018. Available online: https://www.pwc.com/gx/en/services/people-organisation/workforce-of-the-future/workforce-of-the-future-the-competing-forces-shaping-2030-pwc.pdf (accessed on 31 December 2023).
11. McGovern, M. *Thriving in the Gig Economy: How to Capitalize and Compete in the New World of Work*; Red Wheel/Weiser: Newburyport, MA, USA, 2017.
12. Howard, J. Nonstandard work arrangements and worker health and safety. *Am. J. Ind. Med.* **2017**, *60*, 1–10. [CrossRef]
13. Yildirmaz, A.; Goldar, M.; Klein, S. *Illuminating the Shadow Workforce: Insights into the Gig Workforce in Businesses*; ADP Research Institute: Roseland, NJ, USA, 2020.

14. Artecona, R.; Chau, T. *Labour Issues in the Digital Economy*; United Nations: New York, NY, USA, 2017.
15. Tan, Z.M.; Aggarwal, N.; Cowls, J.; Morley, J.; Taddeo, M.; Floridi, L. The ethical debate about the gig economy: A review and critical analysis. *Technol. Soc.* **2021**, *65*, 101594. [CrossRef]
16. Robertson, R.; White, K.E. What is globalization? In *The Blackwell Companion to Globalization*; Wiley Blackwell: Hoboken, NJ, USA, 2007; pp. 54–66.
17. Mohajan, H. The first industrial revolution: Creation of a new global human era. *Soc. Sci. Humanit.* **2019**, *5*, 377–387.
18. Taalbi, J. Origins and pathways of innovation in the third industrial revolution. *Ind. Corp. Change* **2019**, *28*, 1125–1148.
19. Schwab, K.; Davis, N. *Shaping the Future of the Fourth Industrial Revolution Crown Currency*; Crown Currency: Sydney, Australia, 2018.
20. Sheik, I.; Singh, P.K. Industry 4.0: Managerial roles and challenges. *Int. J. Innov. Eng. Res. Technol.* **2020**, *5*, 378–381.
21. Hughes, C.; Robert, L.; Frady, K.; Arroyos, A. A hiring paradigm shift through the use of technology in the workplace. In *Managing Technology and Middle-and Low-Skilled Employees: Advances for Economic Regeneration*; Emerald Publishing Limited: Leeds, UK, 2019; pp. 49–59.
22. Leso, V.; Fontana, L.; Iavicoli, I. The occupational health and safety dimension of industry 4.0. *La Med. Del Lav.* **2018**, *109*, 327.
23. Leesakul, N.; Oostveen, A.; Eimontaite, I.; Wilson, M.L.; Hyde, R. Workplace 4.0: Exploring the implications of technology adoption in digital manufacturing on a sustainable workforce. *Sustainability* **2022**, *14*, 3311. [CrossRef]
24. Khachaturyan, A.A. Digitalization of the economy: Social threats. *Resour. Environ. Econ.* **2022**, *4*, 360–366. [CrossRef]
25. Aghimien, D.; Aigbavboa, C.; Meno, T.; Ikuabe, M. Unravelling the risks of construction digitalisation in developing countries. *Constr. Innov.* **2021**, *21*, 456–475. [CrossRef]
26. Mahato, M.; Kumar, N.; Jena, L.K. Re-thinking gig economy in conventional workforce post-COVID-19: A blended approach for upholding fair balance. *J. Work-Appl. Manag.* **2021**, *13*, 261–276. [CrossRef]
27. International Labour Organisation (Geneva). *Non-Standard Employment Around the World: Understanding Challenges, Shaping Prospects*; International Labour Office: Geneva, Switzerland, 2016.
28. Henderson, J.V. Urbanization and growth. In *Handbook of Economic Growth*; Elsevier: Amsterdam, The Netherlands, 2005; pp. 1543–1591.
29. Hussain, M.; Imitiyaz, I. Urbanization concepts, dimensions and factors. *Int. J. Recent Sci. Res.* **2018**, *9*, 23513–23523.
30. Benach, J.; Gimeno, D.; Benavides, F.G.; Martinez, J.M.; del Mar Torné, M. Types of employment and health in the european union: Changes from 1995 to 2000. *Eur. J. Public Health* **2004**, *14*, 314–321. [CrossRef]
31. Schoukens, P.; Barrio, A. The changing concept of work: When does typical work become atypical? *Eur. Labour Law J.* **2017**, *8*, 306–332. [CrossRef]
32. Roy, G.; Shrivastava, A.K. Future of gig economy: Opportunities and challenges. *IMI Konnect* **2020**, *9*, 14–27.
33. Thompson, J.R.; Mastracci, S.H. The blended workforce: Alternative federal models. *Public Pers. Manag.* **2008**, *37*, 363–380. [CrossRef]
34. Horns, K.W.; Jenkins, R.B. Is the profession of civil engineering becoming a commodity? you should know the answer. *Leadersh. Manag. Eng.* **2011**, *11*, 40–44. [CrossRef]
35. Chappell, D.; Dunn, M.H. *The Architect in Practice*; John Wiley & Sons: Hoboken, NJ, USA, 2015.
36. Anyanwu, C.I. The role of building construction project team members in building projects delivery. *J. Bus. Manag.* **2013**, *14*, 30–34. [CrossRef]
37. Ezenwa, G.C. The role of a professional builder in facility management. *Sci. Prepr.* **2023**. [CrossRef]
38. Subbiah, S.; Saranya, R.; Shakthi, R.; Swetha, R. Buildmart mobile application for construction commodity. In *2022 International Conference on Communication, Computing and Internet of Things (IC3IoT), Chennai, India, 10–11 March 2022*; IEEE: Piscataway, NJ, USA, 2022; pp. 1–6.
39. Lau, Y. Council Post: How Organizations Can Become Project-Based in the Future of Work. *Forbes*, 2 June 2021.
40. Vrijhoef, R.; Koskela, L. A critical review of construction as a project-based industry; identifying paths towards a project-independent approach to construction. In Proceedings of the CIB Symposium, Combining Forces, Advancing Facilities Management & Construction Through Innovation Series, Helsinki, Finland, 13–16 June 2005; pp. 13–24.
41. Aigbe, F.; Aigbavboa, C.; Aliu, J.; Amusan, L. Understanding the Future Competitive Advantages of the Construction Industry. *Buildings* **2024**, *14*, 1616. [CrossRef]
42. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]
43. Shaikh, R.; McGregor, M.; Brown, B.; Lampinen, A. Fleeting Alliances and Frugal Collaboration in Piecework: A Video-Analysis of Food Delivery Work in India. *Comput. Support. Coop. Work. (CSCW)* **2024**, *33*, 1289–1342. [CrossRef]
44. Baber, A. Labour market engineers: Reconceptualising labour market intermediaries with the rise of the gig economy in the United States. *Work Employ. Soc.* **2024**, *38*, 723–743. [CrossRef]
45. Ljungholm, D.P. Employee–employer relationships in the gig economy: Harmonizing and consolidating labor regulations and safety nets. *Contemp. Read. Law Soc. Justice* **2018**, *10*, 144–150.

46. Zou, M. The regulatory challenges of 'Uberization'in China: Classifying ride-hailing drivers. *Int. J. Comp. Labour Law Ind. Relat.* **2017**, *33*, 269–294.
47. Beckmann, F.; Hoose, F. From loopholes to deinstitutionalization: The platform economy and the undermining of labor and social security institutions. *Partecip. E Confl.* **2023**, *15*, 800–826.
48. Brou, D.; Chatterjee, A.; Coakley, J.; Girardone, C.; Wood, G. Corporate governance and wealth and income inequality. *Corp. Gov. Int. Rev.* **2021**, *29*, 612–629. [CrossRef]
49. Healy, J.; Nicholson, D.; Pekarek, A. Should we take the gig economy seriously? *Labour Ind. A J. Soc. Econ. Relat. Work.* **2017**, *27*, 232–248. [CrossRef]
50. Wood, A.J.; Lehdonvirta, V. Platforms disrupting reputation: Precarity and recognition struggles in the remote gig economy. *Sociology* **2023**, *57*, 999–1016. [CrossRef]
51. Lyutov, N.; Voitkovska, I. Remote Work and Platform Work: The Prospects for Legal Regulation in Russia. *Russ. Law J.* **2021**, *9*, 81–113. [CrossRef]
52. Carneiro, L.L.; Moscon, D.C.; Dias, L.M.; Oliveira, S.M.; Alves, H.M. Digiwork: Reflections on the scenario of work mediated by digital platforms in Brazil. *RAM Rev. Adm. Mackenzie* **2023**, *24*, eRAMR230060. [CrossRef]
53. Schlicher, K.D.; Schulte, J.; Reimann, M.; Maier, G.W. Flexible, self-determined. . . and unhealthy? An empirical study on somatic health among crowdworkers. *Front. Psychol.* **2021**, *12*, 724966. [CrossRef] [PubMed]
54. Macdonald, F.; Charlesworth, S. Regulating for gender-equitable decent work in social and community services: Bringing the state back in. *J. Ind. Relat.* **2021**, *63*, 477–500. [CrossRef]
55. Mangold, S. Platform work and traditional employee protection: The need for alternative legal approaches. *Eur. Labour Law J.* **2024**, *15*, 726–739. [CrossRef]
56. Au-Yeung, T.C.; Qiu, J. Institutions, occupations and connectivity: The embeddedness of gig work and platform-mediated labour market in Hong Kong. *Crit. Sociol.* **2022**, *48*, 1169–1187. [CrossRef]
57. Bertolini, A. Regulating Platform Work in the UK and Italy: Politics, Law and Political Economy. *Int. J. Comp. Labour Law Ind. Relat.* **2024**, *40*, 131–154. [CrossRef]
58. Chen, B.; Liu, T.; Guo, L.; Xie, Z. The disembedded digital economy: Social protection for new economy employment in China. *Soc. Policy Adm.* **2020**, *54*, 1246–1260. [CrossRef]
59. Koutsimpogiorgos, N.; Frenken, K.; Herrmann, A.M. Platform adaptation to regulation: The case of domestic cleaning in Europe. *J. Ind. Relat.* **2023**, *65*, 156–184. [CrossRef]
60. Wood, A.J.; Martindale, N.; Lehdonvirta, V. Dynamics of contention in the gig economy: Rage against the platform, customer or state? *New Technol. Work Employ.* **2023**, *38*, 330–350. [CrossRef]
61. Kaine, S.; Josserand, E. The organisation and experience of work in the gig economy. *J. Ind. Relat.* **2019**, *61*, 479–501. [CrossRef]
62. Novitz, T. Multi-level disputes relating to freedom of association and the right to strike: Transnational systems, actors and resources. *Int. J. Comp. Labour Law Ind. Relat.* **2020**, *36*, 471–494. [CrossRef]
63. Albornoz, M.B.; Chávez, H. The challenges of gig economy and Fairwork in Ecuador. *Digit. Geogr. Soc.* **2024**, *6*, 100073. [CrossRef]
64. Kobroń-Gąsiorowska, Ł. Gig Workers in Poland: The Quest for a Protection Model. *E-J. Int. Comp. Labour Stud.* **2023**, *12*, 42–55.
65. Todoli-Signes, A. The 'gig economy': Employee, self-employed or the need for a special employment regulation? *Transf. Eur. Rev. Labour Res.* **2017**, *23*, 193–205. [CrossRef]
66. Goldkind, L.; McNutt, J.G. Vampires in the technological mist: The sharing economy, employment and the quest for economic justice and fairness in a digital future. *Ethics Soc. Welf.* **2019**, *13*, 51–63. [CrossRef]
67. Prassl, J.; Risak, M. Legal responsibility in the gig economy: The employer perspective. *Rev. Minist. Empl. Segur. Soc. Rev. Minist. Trab. Migr. Segur. Soc.* **2019**, *144*, 31–44.
68. Goods, C.; Veen, A.; Barratt, T. "Is your gig any good?" Analysing job quality in the Australian platform-based food-delivery sector. *J. Ind. Relat.* **2019**, *61*, 502–527. [CrossRef]
69. Engblom, S.; Lundberg, M. Answers to the New trade union strategies for new forms of employment questionnaire. *Eur. Labour Law J.* **2019**, *10*, 271–280. [CrossRef]
70. Harpur, P.; Blanck, P. Gig workers with disabilities: Opportunities, challenges, and regulatory response. *J. Occup. Rehabil.* **2020**, *30*, 511–520. [CrossRef] [PubMed]
71. Hartmann-Cortés, K. What (if anything) May Justify a New Policy Regulation for Gig-delivery Workers? The Case of Rappi in Argentina. *E-J. Int. Comp. Labour Stud.* **2021**, *10*, 5–29.
72. Horváth, I.; del Prado, D.P.; Petrovics, Z.; Sitzia, A. The Role of Digitisation in Employment and Its New Challenges for Labour Law Regulation. *ELTE Law J.* **2021**, 101–132. [CrossRef]
73. Choudhary, V.; Shireshi, S.S. Analysing the gig economy in India and exploring various effective regulatory methods to improve the plight of the workers. *J. Asian Afr. Stud.* **2022**, *57*, 1343–1356. [CrossRef]
74. Inversi, C.; Dundon, T.; Buckley, L.-A. Work in the gig-economy: The role of the state and non-state actors ceding and seizing regulatory space. *Work Employ. Soc.* **2023**, *37*, 1279–1298. [CrossRef]

75. Van Doorn, N.; Ferrari, F.; Graham, M. Migration and migrant labour in the gig economy: An intervention. *Work Employ. Soc.* **2023**, *37*, 1099–1111. [CrossRef] [PubMed]
76. Landau, I.; Howe, J.; Thi, T.; Tran, K.; Mahy, P.; Sutherland, C. Regulatory pluralism and the resolution of collective labour disputes in southeast asia. *J. Ind. Relat.* **2023**, *65*, 472–496. [CrossRef]
77. Eberlein, B.; Abbott, K.W.; Black, J.; Meidinger, E.; Wood, S. Transnational business governance interactions: Conceptualization and framework for analysis. *Regul. Gov.* **2014**, *8*, 1–21. [CrossRef]
78. Lesala Khethisa, B.; Tsibolane, P.; Van Belle, J.-P. Surviving the Gig Economy in the Global South: How Cape Town Domestic Workers Cope. In *The Future of Digital Work: The Challenge of Inequality: IFIP WG 8.2, 9.1, 9.4 Joint Working Conference, IFIPJWC 2020, Hyderabad, India, 10–11 December 2020*; Springer International Publishing: Berlin/Heidelberg, Germany, 2020.
79. Adu-Pakoh, K. Labour practices in ghana-a case study of the ghana water company limited. *Int. J. Sci. Basic Appl. Res. (IJSBAR)* **2017**, *31*, 125–132.
80. Laws.Africa Legislation Commons Namibia. Labour Act, Act 11 of 2007. 2007. Available online: https://namiblii.org/akn/na/act/2007/11/eng@2023-03-15/source.pdf (accessed on 31 December 2023).
81. Bendix, S. *Industrial Relations in South Africa*; Juta and Company Ltd.: Cape Town, South Africa, 2010.
82. Sychenko, E.; Laruccia, M.; Cusciano, D.; Chikireva, I.; Wang, J.; Smit, P. Non-Standard Employment in the BRICS Countries. *BRICS Law J.* **2020**, *7*, 4–44. [CrossRef]
83. Shevchuk, A.; Strebkov, D. Digital platforms and the changing freelance workforce in the russian federation: A ten-year perspective. *Int. Labour Rev.* **2023**, *162*, 1–22. [CrossRef]
84. Wang, T.; Cooke, F.L. Internet platform employment in china: Legal challenges and implications for gig workers through the lens of court decisions. *Relat. Ind./Ind. Relat.* **2021**, *76*, 541–564. [CrossRef]
85. Wei, W.; Thomas MacDonald, I. Modeling the job quality of 'work relationships' in china's gig economy. *Asia Pac. J. Hum. Resour.* **2022**, *60*, 855–879. [CrossRef]
86. Donovan, S.A.; Bradley, D.H.; Shimabukuru, J.O. *What Does the Gig Economy Mean for Workers?* Congressional Research Service: Washington, DC, USA, 2016.
87. Youghp-Content. How the Construction Industry Is Affected by the Gig Economy. Handle. 2020. Available online: https://www.handle.com/gig-economy-construction/ (accessed on 9 June 2024).
88. Koutsimpogiorgos, N.; van Slageren, J.; Herrmann Andrea, M.; Frenken, K. Conceptualizing the Gig Economy and Its Regulatory Problems. *Policy Internet* **2020**, *12*, 525–545. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.